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LEISHMAN-DONOVAN BODIES AND DONOVANIASIS*†

SIR WILLIAM BOOG LEISHMAN, 1865–1926
CHARLES DONOVAN, 1863–1951

BY

HAMILTON BAILEY AND W. J. BISHOP

Leishman-Donovan bodies are small round or oval bodies found in the spleen and liver of patients suffering from kalaazar, a tropical disease characterized by anaemia, irregularly remittent fever, and emaciation. The bodies are the intra-cellular forms of the protozoan parasite *Leishmania donovani*, which causes the disease.

William Boog Leishman was born in Glasgow, the son of William Leishman,‡ a distinguished obstetrician of that city. William Leishman, junior, was educated at Westminster School and at the University of Glasgow, where he graduated M.B., C.M. in 1886. In 1887 he entered the army medical service, and he spent several years in India before being posted, in 1899, to the Army Medical School at Netley. He had taken with him to India a microscope and had grasped every opportunity of becoming proficient in its use. At Netley he spent a great deal of his spare time in the pathological department, then under the direction of (Sir) Almroth Wright.§ He was able to watch the development of Wright's researches on anti-typhoid vaccination, in which he was later to take an important part. In 1900 he was appointed Assistant Professor of Pathology at Netley, and at this time he elaborated the stain for blood, now known universally as Leishman's stain.

General Sir William Leishman

Leishman made his great discovery in the following way:

> In 1900, Private B., invalided from India with attacks of pyrexia, anaemia, and enlargement of the spleen was admitted to Netley Hospital for investigation and treatment. Among other examinations, Leishman performed splenic puncture, stained the resulting specimen with his stain, and saw an enormous number of heavily-stained round and oval bodies in the splenic cells and in the red blood cells. He searched the literature, but could find no comparable finding, and he was nonplussed. Many months later he was examining the blood, liver, and spleen of a rat dead of trypanosomiasis; bodies identical in shape, size, and staining reaction to those found in the case of Private B. were unmistakably present.

It was now 1903, and he published a short note of his findings in the *British Medical Journal*. Captain Charles Donovan confirmed the findings in Madras. Sir Ronald Ross** the same year proposed that the bodies be called *Leishman-Donovan bodies*, and the parasite *Leishmania donovani*, and this nomenclature has been adopted throughout the world.

Thereafter Leishman made a number of other important discoveries in the field of tropical medicine. He rose rapidly to the highest ranks that the Royal Army Medical Corps can offer, and after filling with distinction the Chair of Pathology at Millbank Military Hospital, he became Director General of the Army Medical Services. He received the honour of Knighthood in 1909 and was elected a

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‡ William Leishman, 1833–1894, Regius Professor of Midwifery, Glasgow.

§ Sir Almroth Wright, 1861–1947. Professor of Bacteriology, St. Mary's Hospital, London. Pioneer of anti-typhoid inoculation.

** Sir Ronald Ross, 1857–1932. Director, Ross Institute for Tropical Diseases, London, proved that malaria was carried by the anopheles mosquito.

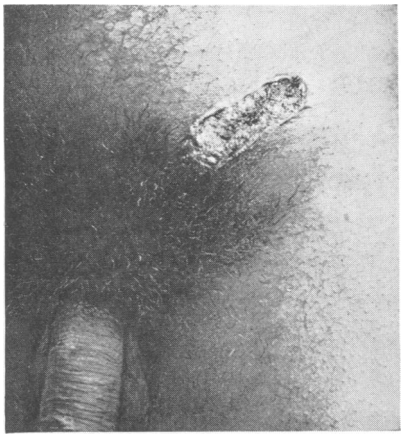
Fellow of the Royal Society in 1910. In 1926 General Sir William Leishman died at the age of 61 years, after a short illness.

Charles Donovan graduated M.D. at the Royal University of Ireland in 1889. Soon after qualification he entered the Indian Medical Service. At the time that he confirmed Leishman's discovery (Donovan, 1903) he was a Captain, and was second physician at the Government General Hospital, Madras. It must not be lost sight of that in 1905 Charles Donovan made a discovery of even greater moment than that with which his name is jointly associated, and which has been described above.

Lieutenant-Colonel Charles Donovan

Donovan quite independently found the cause of granuloma inguinale (syn. granuloma venereum), a venereal disease rarely seen in England until the West Indians began to immigrate in substantial numbers (1956–1958). Granuloma inguinale, which must not be confused with lymphogranuloma inguinale, is caused by the *Donovania granulomatis*, a Donovan body found characteristically in the cytoplasm of white blood cells, particularly the large mononuclear leucocytes. Granuloma inguinale gives rise to a painless swelling which later breaks down to form an ulcer, predominantly in the inguinal region.

In 1905 Major Donovan was appointed Civil Superintendent of Royapettah Hospital—a post



Granuloma inguinale (Dr. Gerald H. Knight, Birmingham)

that carried with it responsibility for the medical care of Government servants living in the district of Madras city. This hospital had eighty beds, and the post suited Donovan's independent character and gave him leisure to pursue research. In addition he held the post of Professor of Physiology at Madras College.

Apart from the great discoveries described above, Donovan was convinced that carriers of many of the tropical diseases in the Madras Residency were to be found among the denizens of the jungle, and he spent his holidays collecting blood slides to prove the existence of monkey malaria.

It is truly remarkable that while his co-discoverer in the Army was promoted with unprecedented rapidity, Donovan in the I.M.S. remained a Lieutenant-Colonel. Possibly it was for this reason that in 1920, when he was 57 years old, he resigned, and went to live in the village of Bourton-on-the-Water, Gloucestershire, where he died in 1951 at the age of 88 years.

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